

REMARKS

Favorable reconsideration and allowance of the claims of the present application are respectfully requested.

Before addressing the specific grounds of rejection raised in the outstanding Office Action dated January 29, 2007, Applicants have amended Claims 21, 23, and 32 in the manner indicated supra. Support for these amendments is found throughout the instant application; See for example, paragraphs [0025], [0030], [0033], [0038], [0066] – [0069] and FIGS. 5B – 5C of the instant application. Since the amendments are fully supported, entry thereof is respectfully requested.

In the outstanding Office Action, the Examiner rejected Claims 21 – 40 under 35 U.S.C. §112 as allegedly indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicants regard as the invention. Claims 21 – 40 stand rejected under 35 U.S.C. §103(a) as alleged obvious over the combined disclosures of U.S. Patent No. 6,348,394 to Mandelman et al., (hereinafter “Mandelman”), U.S. Patent Application Publication No. 2004/0155275 to Divakaruni et al., (hereinafter “Divakaruni”), U.S. Patent No. 6,156,620 to Puchner et al., (hereinafter “Puchner”), U.S. Patent No. 5,940,717 to Rengarajan et al., (hereinafter “Rengarajan”), and U.S. Patent Application Publication No. 2002/0155730 to Mukai et al., (hereinafter “Mukai”).

In response to the Examiner’s claim rejection under 35 U.S.C. §112, Applicants submit that currently amended Claims 21, 32, and the dependent claims therefrom are not indefinite. In the outstanding Office Action, the Examiner alleged ambiguity as to presence of a nitride liner on a remaining portion of a sidewall of a first trench isolation. By removing the phrase, “at least a portion of,” the absence of any nitride liner from the remaining portion of the first sidewall of the first trench isolation is clearly stated. Similarly, the phrase, “at least a portion of” has been

removed from the description of presence of a nitride liner on a second sidewall. Therefore, the first sidewall is void of any nitride liner and the second sidewall has a nitride liner. In other words, no nitride liner is present on the first sidewall, and a nitride liner is present on the second sidewall. The first sidewall and the second sidewall are distinguished by the presence or absence of a nitride liner thereupon. FIGS. 5B and 5C show both types of sidewalls. It is noted that the second sidewall may be entirely covered with the nitride liner, or alternatively, only a portion of the second sidewall may be covered with the nitride liner while the remaining portion is not.

The Examiner also alleged ambiguity in the structure as claimed in Claim 32 as to presence or absence of a nitride liner. By removing the phrases, "at least a portion of" from Claim 32, the absence of a nitride liner from the first sidewall is clearly indicated. No nitride liner is present on the first sidewall, and a nitride liner is present on the second sidewall. As in Claim 21, it is noted that the second sidewall may be entirely covered with the nitride liner, or alternatively, only a portion of the second sidewall may be covered with the nitride liner while the remaining portion does not.

As currently amended, Applicants submit that the exact structure of the claimed invention is definite. Applicants respectfully request that the rejection under 35 U.S.C. §112 be withdrawn.

Concerning the obviousness rejection, Applicants respectfully submit that the claimed structure, as recited in currently amended Claims 21, 32 and the dependent claims therefrom, is not rendered obvious by the combined disclosures of Mandelman, Divakaruni, Puchner, Rengarajan, and Mukai.

Specifically, none of the references teach or suggest coexistence of a first sidewall between a first semiconductor area and a first trench isolation region, in which **the first sidewall**

is void of any nitride liner AND a second sidewall between a second semiconductor area and a second trench isolation region, in which **a nitride liner is present on the second sidewall.** Further, none of the references teach or suggest coexistence of a first sidewall that adjoins a trench isolation region, in which **the first sidewall is void of any nitride liner AND a second sidewall that adjoins the trench isolation region, in which **a nitride liner is present on the second sidewall.****

Applicants observe that all sidewalls of a trench isolation region in each of the applied references have the same composition. Applicants submit that in order to have different compositions on different sidewalls of one or multiple trench isolation region(s), it is necessary to differentiate sidewalls during processing as the present invention does. None of the applied references provide such a mechanism, and therefore, the applied references are incapable of producing a structure having two different compositions for different sidewalls of (a) trench isolation region(s). In contrast, the present invention teaches the use of a block mask to differentiate the various portions of the sidewalls, as disclosed in paragraphs [0025], [0030], [0038], [0066], and [0067] of the instant application. One of ordinary skill in the art cannot produce the inventive structure as disclosed and claimed in the instant application from a combination of the applied references.

The various §103 rejections also fail because there is no motivation in the applied references, either individually or in practicable combinations, which suggests modifying the disclosed structures to include the various elements, particularly, **a first sidewall which is void of any nitride liner AND a second sidewall on which a nitride liner is present,** as described in the claims of the present invention. There is no motivation provided in the applied references, or otherwise of record, to make the modification mentioned above since no benefit of

differentiating sidewalls of trench isolation region is mentioned in the applied references and any such attempt would only drive up the processing cost of the prior art structures during manufacturing. In contrast, the present application provides a clear motive to form different sidewall structures, i.e., manipulation of stress, as disclosed in paragraphs [0014], [0015], [0016], [0019], [0021], [0025], [0033], and [0069] of the instant application. The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification." In re Vaeck, 947 F.2d, 488, 493, 20 USPQ 2d. 1438, 1442 (Fed.Cir. 1991).

In view of the above amendments and remarks, reconsideration of the amended claims and consideration of new claims for allowance is earnestly solicited.

Respectfully submitted,



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